

## **METADATA FOR THE 1998 SAN DIEGO COUNTY LAND USE SURVEY DATA**

### **Originator:**

California Department of Water Resources

### **Date of Metadata:**

December 5, 2000

### **Abstract:**

The 1998 San Diego County land use survey data set was developed by DWR through it's Division of Planning and Local Assistance. The data was gathered using aerial photography and extensive field visits, the land use boundaries and attributes were digitized, and the resultant data went through standard quality control procedures before finalizing. The land uses that were gathered were detailed agricultural land uses, and lesser detailed urban and native vegetation land uses. The data was gathered and digitized by staff of DWR's Southern District and the quality control procedures were performed jointly by staff at DWR's DPLA headquarters from Southern District.

The finalized data include DWG files (land use vector data) and shape files (land use vector data).

### **Purpose:**

This data was developed to aid in DWR's efforts to continually monitor land use for the main purpose of determining the amount of and changes in the use of water.

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## Data Development:

1. Some of the aerial photography for interior San Diego County was taken in November 1992 but most of the survey used photography dating from February and March 1995. Using the photographs, staff interpreted land use changes from the photos, and delineated those land use boundaries onto USGS 7 1/2 minute quadrangles (1:24,000 scale).
2. The USGS quadrangles with the delineations were taken to the field and virtually all the delineated areas were visited to positively identify the land use. For the agricultural areas, there were two site visits, to ensure that multicropping was captured. The site visits occurred in May/June 1998 and October 1998. The appropriate land use codes were printed within each delineated area on the quadrangle.
3. The USGS quadrangles with the land use delineations were digitized, using a large digitizing tablet and AUTOCAD (using a standardized digitizing process) where both the linework and attributes were digitized.
4. In February 2000 the San Diego County Water Authority provided DWR with high-quality digital imagery from September 1998 of the north-central interior portion of the survey area. The imagery was used to make final updates and refinements to the citrus and avocado acreage in the difficult-to-access hilly backcountry.
5. After quality control/assurance procedures were completed on each file, the data was finalized.
6. The data was brought into a GIS for further processing. A county-wide data file was first created. This data file represented the actual observations from the site visits. Then that file was further processed to yield a final file which represented the interpreted land use for the year. The file 98SDUCF.XLS is an EXCEL file which includes the original land use observed attributes, and the interpreted land use attributes.

An explanation of interpreted land use: Our land use survey digital processing system is designed to be able to summarize crop and other land use acreage. When performing multi-visit surveys, our observation attributes are just that, observations. A 40 acres field might have an alfalfa crop observed during both site visits, and the resulting digitized attributes would be a double crop, alfalfa followed by alfalfa. Using our acreage summarizing system, it would summarize the crop acreage as 80 acres of alfalfa (40 acres of alfalfa, followed by another 40 acres of alfalfa). In reality, there was only one crop of alfalfa, seen twice.

The interpreted land use for this field would be a single crop of alfalfa, and our acreage summarizing system would correctly result in 40 acres of alfalfa. The interpretation is required to ensure that correct crop acreage is determined.

6. Using the final file, acreage summaries were developed.

#### **Data Accuracy:**

The land use boundaries were hand drawn onto USGS 1:24,000 quads, and digitized on a digitizing tablet using AUTOCAD. For those areas where the lines were drawn onto USGS quads and digitized, the accuracy is less than that of the quads (about 50 foot accuracy).

The land use attribute accuracy is very high, because almost every delineated field was visited in the field. The accuracy is less than 100 percent because some errors must have occurred. There are three possible sources of attribute errors which are:

- 1) Misidentification of land use in the field (and entering that incorrect attribute on the field sheet);
- 2) Correct identification of land use, but entering an incorrect attribute on the field sheet, or;
- 3) Accidentally affixing an incorrect attribute during the digitizing process.

#### **Projection Information:**

The DWG and shape files are in a transverse mercator projection, with identical parameters to UTM projections, except the central meridian is -120 degrees (120 degrees west). For comparison, UTM 10 has a central meridian of 123 degrees west, and UTM 11 has a central meridian of 117 degrees west. This projection allows virtually all of the geographic area of California to be in one 6 degree zone (as opposed to two zones, UTM 10 and 11).

Projection:	Transverse Mercator
Datum:	NAD27
Units:	Meter
Scale Reduction:	0.9996
Central Meridian:	120 degrees west
Origin Latitude:	0.00 N
False Easting:	500,000
False Northing:	0.00

#### **Land Use Attributes:**

All land use attributes were coded using the Department's Standard Land Use Legend dated March 1999 (98legend.pdf). The legend explains in detail how each delineated area is attributed in the field, and what the coding system is.

The actual land use code that is printed onto the field maps is different in arrangement than the codes that result from the digitizing process. The file attributes.pdf is a detailed explanation of the coding system used for both coding the field sheets, and the codes that end up in digitized form in the database files associated with the shape files.

### **Information on the AUTOCAD (DWG) Files:**

The land use data is available in AUTOCAD 12 format by quad, with one file per quad. The file naming convention is 98SUXXXX.DWG, where XXXX is the DWR quadrangle number. For example, file 98SD7460.DWG is the AUTOCAD drawing file for the 1998 San Diego County land use survey for quad 7460 (the La Mesa quad).

Every quadrangle file has identical layers, nomenclature, and line colors. They are as follows:

Layer	Description	Color
0	AutoCAD's default layer	White
CQN	California DWR quad number	Cyan
GSN	USGS quad number	Cyan
LUB	Land use boundary lines	Yellow
LUC	Land use codes for GRASS	White
LUT	Visible land use text	Green
QB	The quad's boundary	White
QN	Quad name	Cyan

Following is an explanation of the attributes (for each delineated area) in the LUC layer of each quad file:

ACRES:	Number of acres in the delineated area (may or may not be present)
WATERSOURC:	The type of water source used for the delineated area
MULTIUSE:	Type of land uses within the delineated area
CLASS1:	The class for the first land use
SUBCLASS1:	The subclass for the first land use
SPECOND1:	The special condition for the first land use
IRR_TYP1:	Irrigated or non-irrigated, and irrigation system type for the first land use
PCNT1:	The percentage of land associated with the first land use
CLASS2:	The class for the second land use
SUBCLASS2:	The subclass for the second land use
SPECOND2:	The special condition for the second land use
IRR_TYP2:	Irrigated or non-irrigated, and irrigation system type for the second land use
PCNT2:	The percentage of land associated with the second land use
CLASS3:	The class for the third land use

SUBCLASS3: The subclass for the third land use  
 SPECOND3: The special condition for the third land use  
 IRR\_TYP3: Irrigated or non-irrigated, and irrigation system type  
 for the third land use  
 PCNT3: The percentage of land associated with the third land  
 use

### **Information on the Shape Files:**

Shape files were created for each quad and two for the whole survey area, one with the original observations and the other with interpreted attributes. The naming conventions used for the quad DWG files is used for the quad shape files (for example, 98SD7460.shp, 98SD7460.shx, and 98SD7460.dbf for quad number 7460, the La Mesa quad). The name of the shape files for the whole survey area are 98SD.shp (with the original observations) and 98SDINT.shp (with the interpreted data). Following is an explanation of the land use attributes in the DBF files:

BL\_X: This is the X coordinate of the interior point in the delineated area  
 BL\_Y: This is the Y coordinate of the interior point in the delineated area  
 ACRES: Number of acres in the delineated area (may or may not be present)  
 WATERSOURC: The type of water source used for the delineated area  
 MULTIUSE: Type of land uses within the delineated area  
 CLASS1: The class for the first land use  
 SUBCLASS1: The subclass for the first land use  
 SPECOND1: The special condition for the first land use  
 IRR\_TYP1A: Irrigated or non-irrigated for the first land use  
 IRR\_TYP1B: Irrigation system type for the first land use  
 PCNT1: The percentage of land associated with the first land use  
 CLASS2: The class for the second land use  
 SUBCLASS2: The subclass for the second land use  
 SPECOND2: The special condition for the second land use  
 IRR\_TYP2A: Irrigated or non-irrigated for the second land use  
 IRR\_TYP2B: Irrigation system type for the second land use  
 PCNT2: The percentage of land associated with the second land use  
 CLASS3: The class for the third land use  
 SUBCLASS3: The subclass for the third land use  
 SPECOND3: The special condition for the third land use  
 IRR\_TYP3A: Irrigated or non-irrigated for the third land use  
 IRR\_TYP3B: Irrigation system type for the third land use  
 PCNT3: The percentage of land associated with the third land use  
 UCF\_ATT: Concatenated attributes from MULTIUSE to PCNT3

### **Important Points about Using this Data Set:**

1. The land use boundaries were either hand drawn directly on USGS quad maps and then digitized, or digitized on-screen using corrected imagery. They were drawn to depict observable areas of the same land use. They were not drawn to represent legal parcel (ownership) boundaries, or meant to be used as parcel boundaries.
2. This survey was not a "snapshot" in time, but incorporated two field visits for agricultural areas. The original land use attributes of each delineated area (polygon) were based upon the surveyor's observations in the field at those times, and are reflected in the quad DWG and shapefiles, and in the survey wide shape file 98SD.shp. For the survey wide shape file 98SDINT.shp, the attributes are the interpreted results.
3. If the data is to be brought into a GIS for analysis of cropped (or planted) acreage, two things must be understood:
  - a. The acreage of each field delineated is the gross area of the field. The amount of actual planted and irrigated acreage will always be less than the gross acreage, because of ditches, farm roads, other roads, farmsteads, etc. Thus, a delineated corn field may have a GIS calculated acreage of 40 acres but will have a smaller cropped (or net) acreage, maybe 38 acres.
  - b. Double and multicropping must be taken into account. A delineated field of 40 acres might have been cropped first with grain, then with corn, and coded as such. To estimate actual cropped acres, the two crops are added together (38 acres of grain and 38 acres of corn) which results in a total of 76 acres of net crop (or planted) acres.
4. Water source and irrigation type information were not collected for this survey.